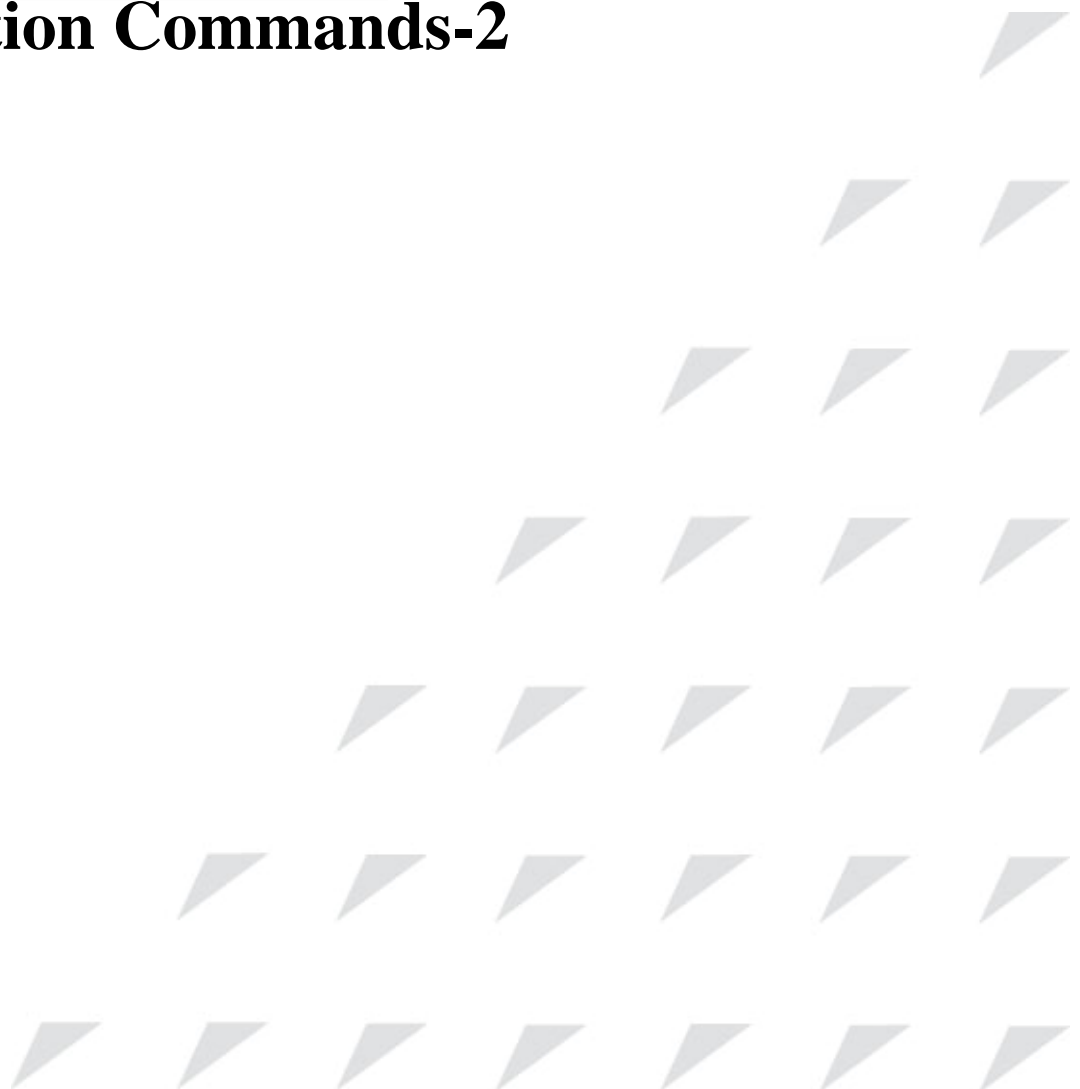


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MST Function Commands-2



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Chapter 1 MST Function Commands

1.1 show spanning tree

[Function]

Show the spanning-tree examples or appointed spanning-tree information.

[Command Format]

show spanning-tree

[Command Modes]

Privilege configuration mode; privileged user

[Executing Command Instruction]

Show the information of spanning tree, including example information and port information under the example. Show the example information if there is appointed example No.; show information of all running example information (in order of example number) if there is no appointed example No.; related prompt information will show if the appointed example is invalid.

[Explanation of command execution echo]

RSTP Admin State: <Enable/Disable>

Protocol Mode: RSTP

Bridge ID: MAC address

Root ID: MAC address

Root Port: none

Root Cost: 0

Max Age: 20 Bridge Max Age: 20

Hello Time: 2 Bridge Hello Time: 2

Forward Delay: 15 Bridge Forward Delay: 15

Max Transmission Limit:3 per hello time

[Related commands]

Commands	Description
spanning-tree	Enable/disable spanning tree.
spanning-tree bridge-diameter	Set network diameter.
spanning-tree priority	Set system priority or port priority.
spanning-tree path-cost	Set port path cost.
spanning-tree forward-delay	Set forward-delay of spanning-tree protocol.
spanning-tree hello-time	Set hello-time of spanning-tree.

spanning-tree max-age	Set max-age of spanning-tree.
spanning-tree max-hops	Set maximal hops of MST.
spanning-tree transit-limit	Set maximal trasimit packets per hello time.
spanning-tree link-type	Set link type of port.
spanning-tree mode	Set spanning-tree mode of the switch.

1.2 show spanning-tree port

[Related commands]

Show the port activity status and configuration of spanning tree.

show spanning-tree [*instance instance-id*] **port** [*portlist*] [*detail*]

[Parameter]

instance-id: instance ID. Range : 0-4095 ;

portlist: port list ;

detail: show detail information.

[Command Modes]

Privileged EXEC; privileged user

[Executing Command Instruction]

Show the port activity status and configuration of spanning tree. Show port information under the example if there is appointed example number and don't show information under other examples; show port information under all examples if there is no appointed example number; show all port information participates in spanning tree calculation under the switch if there is no port list appointed, or just show the appointed port list.

[Explanation of command execution echo]

RSTP Admin State: <Enable/Disable>

Protocol Mode: RSTP

Bridge ID: MAC address

Root ID: MAC address

Root Port: none

Root Cost: 0

Max Age: 20 *Bridge Max Age:* 20

Hello Time: 2 *Bridge Hello Time:* 2

Forward Delay: 15 *Bridge Forward Delay:* 15

Max Transmission Limit: 3 per hello time

[Related commands]

Commands	Description
spanning-tree	Enable/disable spanning tree.
spanning-tree priority	Set system priority or port priority.

spanning-tree path-cost	Set port path cost.
spanning-tree link-type	Set link type of switch port.
spanning-tree edged-port	Set edged port type of switch.
spanning-tree clear statistics	Clear spanning tree statistics under port.

1.3 spanning-tree

[Function]

Enable or disable spanning tree (802.1W Rapid Spanning Tree Protocol) .

[Command Format]

spanning-tree {*enable* | *disable*}

[Parameter]

enable: Enable spanning tree;

disable: Disable spanning tree.

[Default]

Enable.

[Command mode]

Global configuration mode or Physical port configuration mode; privileged user

[Executing Command Instruction]

STP can avoid loop in network, but will increase CPU overhead. Users can enable/disable STP according to actual need.

Before or after starting STP, it is available to use configuration command to configure STP parameters for device of the ports. Operating this command under global configuration mode is to enable/disable device STP; while operating this command under Ethernet port configuration mode is to enable/disable port STP. No matter port STP enable or disable, STP will stop all schedules of spanning tree when global STP disable; port STP will be effective only when global STP is enabled.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Globally disable spanning tree protocol:

Raisecom(config)# **spanning-tree** *disable*

Globally enable spanning tree protocol:

Raisecom(config)# **spanning-tree** *enable*

Under physical interface configuration mode, disable spanning tree protocol on the port:

Raisecom(config-port)# **spanning-tree** *disable*

[Related commands]

Commands	Description
show spanning-tree <i>[detail]</i>	Show active state and configuration information of spanning tree.
show spanning-tree port-list <i>[detail]</i>	Show port information of spanning tree.

1.4 spanning-tree clear statistics

[Function]

Clear RSTP statistical information.

[Command Format]

spanning-tree clear statistics

[Command Modes]

Physical interface/port range configuration mode; privileged user

[Executing Command Instruction]

Use this command to clear statistical information on designated port.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Clear spanning tree information of port 3:

Raisecom(config)#**interface port 3**

Raisecom(port)#**spanning-tree clear statistics**

[Related commands]

Commands	Description
show spanning-tree port-list <i>[detail]</i>	Show port information of spanning tree.

1.5 spanning-tree edged-port

[Function]

Set edged-port type of the port.

[Command Format]

spanning-tree edged-port

[no] spanning-tree edged-port

[Default]

All ports of bridge are configured as self-check edged port mode.

[Command Modes]

Physical port/ port range configuration mode; privileged user.

[Executing Command Instruction]

spanning-tree edged-port command is used to configure current Ethernet port to be edged-port.

no spanning-tree edged-port is used to recover the current Ethernet port to default status, that is non edged-port.

If current Ethernet port is connected to other switch, please use **no spanning-tree edged-port** command to specify it to non edged-port.

Use **spanning-tree edged-port** to specify the Ethernet port which directly connected to PC to be edged-port.

If you configure a port as edge port on an RSTP switch, the edge port immediately transitions to the forwarding state. So please enable it only on ports that connect to a single end station.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Set port 1 to be edged port:

```
Raisecom(config)#interface port 1
```

```
Raisecom(port)#spanning-tree edged-port
```

Recover port 1 to be edged port self-check mode:

```
Raisecom(port)# no spanning-tree edged-port
```

[Related commands]

Commands	Description
show spanning-tree port-list <i>[detail]</i>	Show port information of spanning tree.

1.6 spanning-tree forward-delay

[Function]

Set the forward-delay of spanning tree.

The forward delay is the number of seconds a port waits before changing from its spanning-tree learning and listening states to the forwarding state:

[Command Format]

spanning-tree forward-delay <4-30>

no spanning-tree forward-delay**[Parameter]**

<4-30>: The time delay of spanning tree protocol bridge port status conversion, unit is second.

[Default]

15 seconds

[Command Modes]

Global configuration mode; privileged user

[Executing Command Instruction]

The forward delay is the number of seconds a port waits before changing from its spanning-tree learning and listening states to the forwarding state. Use command **no spanning-tree forward-delay** can recover to default value.

Configuration of max-age will triggering forward-delay automation schedule to calculate a priority value for matching max-age. Configuration of network diameter and hello-time will trigger forward-delay automation schedule as well. If users don't want enable automation schedule, it is better to configure network diameter, hello-time or max-age before configure forward-delay.

[Explanation of command execution echo]

Set successfully.

*Set unsuccessfully. Forward-delay must satisfy the formula: $2 * (\text{forward-delay} - 1) \geq \text{max-age}$!*

[Example]

Set the value of forward-delay to 10 seconds:

```
Raisecom(config)# spanning-tree forward-delay 10
```

[Related commands]

Commands	Description
show spanning-tree port-list <i>[detail]</i>	Show port information of spanning tree.
spanning-tree max-age	Set the max-age of spanning tree.
spanning-tree priority	Set the system priority or port priority of spanning tree.
spanning-tree bridge-diameter	Set network diameter of spanning tree protocol.

1.7 spanning-tree hello-time

[Function]

You can configure the interval between the generations of configuration messages by the root switch by changing the hello time.

[Command Format]

spanning-tree hello-time <1-10>

no spanning-tree hello-time**[Parameter]**

<1-10>: The time interval of time-lapse sending bridge configuration information. Unit is second.

[Default]

2 seconds.

[Command Modes]

Global configuration mode; privileged user

[Executing Command Instruction]

You can configure the interval between the generations of configuration messages.

BPDU interval is 2 seconds by default. Decrease the interval to strong STP when loss ratio of configuration interface is high; increase this interval can reduce CPU occupation by STP. Reasonable hello-time will ensure connection of network and don't take up too much resource to find out network fault.

Forward-delay and max-age value will be calculated out by automation when configuring hello-time. Hello-time value will renew to default 2 seconds when configuration network diameter, in this case, if user want enable hello-time, it is suggested not configure network diameter after configuration hello-time. Or else the value configured forestall will be changed during configuration of network diameter. Use the command **no spanning-tree hello-time** to recover default value.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Set the hello-time of spanning tree to 3 seconds:

```
Raisecom(config)# spanning-tree hello-time 3
```

Set the hello-time of spanning to the default value that is 2 seconds:

```
Raisecom(config)# no spanning-tree hello-time
```

[Related commands]

Commands	Description
show spanning-tree port-list <i>[detail]</i>	Show port information of spanning tree.
spanning-tree forward-delay	Set the forward-delay of spanning tree.
spanning-tree max-age	Set the max-age of spanning tree.
spanning-tree bridge-diameter	Set network diameter of spanning tree protocol.

1.8 spanning-tree link-type

[Function]

Set the RSTP link type of switch port.

[Command Format]

spanning-tree link-type *{point-to-point / shared}*

no spanning-tree link-type

[Parameter]

point-to-point: set the RSTP link type as point-to-point.

shared: set the type of link to shared.

[Default]

By default, switch set link type as point-to-point in full-duplex mode, as shared link in half-duplex mode.

[Command Modes]

Physical port/port range configuration mode; privileged user.

[Executing Command Instruction]

User can use this command to change the default setting of RSTP link type. Example: half-duplex port use point-to-point mode to connect the RSTP switch, if the port is set to point-to-point, then this port can change its state quickly.

Command **spanning-tree link-type** can change default setting of port link type, and command **no spanning-tree link-type** will recover auto-check of port link type.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Set link type of the port as shared link:

Raisecom(config)# **spanning-tree link-type shared**

Recover the port to auto-negotiation link type:

Raisecom(config)# **no spanning-tree link-type**

[Related commands]

Commands	Description
show spanning-tree port-list <i>[detail]</i>	Show port information of spanning tree.

1.9 spanning-tree max-age

[Function]

Set maximum aging time of spanning tree.

[Command Format]

spanning-tree max-age <6-40>

no spanning-tree max-age

[Parameter]

<6-40>: The maximum aging time of spanning tree configuration information, unit is second.

[Default]

The maximum age is 20 seconds.

[Command Modes]

Global configuration mode; privileged user

[Executing Command Instruction]

The maximum aging time is the number of seconds a switch waits without receiving spanning-tree configuration messages before attempting a reconfiguration. Command **no spanning-tree max-age** will recover to default value.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Set the max-age of spanning tree to 30 seconds:

Raisecom(config)# **spanning-tree max-age 30**

Set the max-age of spanning tree to 20 seconds:

Raisecom(config)# **no spanning-tree max-age**

[Related commands]

Commands	Description
show spanning-tree port-list [detail]	Show port information of spanning tree.
spanning-tree forward-delay	Set forward-delay of spanning tree.
spanning-tree hello-time	Set the hello-time of spanning tree.
spanning-tree bridge-diameter	Set the diameter of spanning tree.

1.10 spanning-tree mcheck

[Function]

Force the port as RSTP mode.

[Command Format]

spanning-tree mcheck

[Command Modes]

Physical port/range configuration mode; privileged user.

[Executing Command Instruction]

When the network is stable, though the bridge which runs STP is disconnected, the port of running switch which runs RSTP still runs under the STP mode, under this situation, user can use **spanning-tree mcheck** command to set mCheck variable to force the port moving to RSTP mode. If the port is moved to RSTP mode, when the port get the new STP packet, port will back to STP mode again.

Only when the RSTP switch is working under global RSTP mode, user can use this command. If the RSTP switch is working under global STP mode, the command is not available.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Set port 3 works under STP mode, disconnecting with opposite end; and the bridge works under RSTP mode, so port 3 should works under RSTP mode:

```
Raisecom(config)# interface port 3
```

```
Raisecom(port)#spanning-tree mcheck
```

[Related commands]

Commands	Description
show spanning-tree port-list	Show port information of spanning tree protocol.

1.11 spanning-tree mode

[Function]

Set the switch in STP or RSTP mode.

[Command Format]

spanning-tree mode {stp/rstp}

no spanning-tree mode

[Parameter]

stp: STP mode.

rstp: RSTP mode.

[Default]

Spanning-tree running mode is MSTP mode by default.

[Command Modes]

Global configuration mode; privileged user

[Executing Command Instruction]

802.1w protocol defines two modes: stp mode and rstp compatible mode.

Under the STP mode, switch does not execute fast forwarding of designated port and fast changing from designated port to root port. RSTP only send STP BPDU and topology changing notification. The received RST BPDU will be dropped.

Under RSTP mode switch sends MST BPDU. If the connected switch port is running STP protocol, port will change to STP compatible mode.

Use the command **no spanning-tree mode** to recover switch into default working mode.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Set switch info STP spanning tree mode:

Raisecom(config)# **spanning-tree mode stp**

[Related commands]

Commands	Description
show spanning-tree	Show the activity status of spanning tree and configuration information.

1.12 spanning-tree path-cost

[Function]

Set the path cost of spanning tree.

[Command Format]

spanning-tree path-cost <0-200000000>

no spanning-tree path-cost

[Parameter]

path-cost: identify the path-cost, range form 0-200000000. Under the default situation, the bridge gets the path-cost is derived from the media speed of an interface.

[Default]

Generally speaking, the port path-cost should base on their physical characteristic, default situation as following:

10Mbps is 2000000;

100Mbps is 200000;

1000Mbps is 20000.

[Command Modes]

Physical port/ port range configuration mode; privileged user

[Executing Command Instruction]

The spanning-tree path cost default value is derived from the media speed of an interface. If a loop occurs, spanning tree uses cost when selecting an interface to put in the forwarding state. You can assign lower cost values to interfaces that you want selected first and higher cost values that you want selected last. If all interfaces have the same cost value, spanning tree puts the interface with the lowest interface number in the forwarding state and blocks the other interfaces.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Raisecom(config-port)# **spanning-tree** path-cost 100000

[Related commands]

Commands	Description
show spanning-tree port	Show the port activities status and configuration information of spanning tree.

1.13 spanning-tree priority (global mode)

[Function]

Set spanning tree protocol system priority.

[Command Format]

spanning-tree priority <0-61440>

no spanning-tree priority

[Parameter]

<0-61440>: it is used to identify bridge priority, this value is not continuous, range is 0~61440, step is 4096.

[Default]

The system priority is 32768.

[Command Modes]

Global configuration mode; privileged user

[Executing Command Instruction]

The STP needs to judge which is better according to system ID for selecting root bridge. Lower system ID indicates higher priority and it is easier to be selected as root bridge. System ID is made from 8 characters, the highest two characters is system priority and the next 6 characters

are system MAC address. Thus the level of system ID is decided by system priority.

Priority should value numerals for times of 4096, like 0, 4096, 8192, etc. the smaller the number, the higher the priority, which means the switch is very possible to become root bridge of the switching network.

One switch may have different priority in different STP applications; command **spanning-tree instance instance-id priority** can set different system priority for different applications and to affect root bridge and selection of specified bridge. Only input command **spanning-tree priority** means designate priority for application 0 (CIST). Command **no spanning-tree [instance instance-id] priority** will recover default priority for the application.

[Explanation of command execution echo]

Set successfully.

Spanning-tree bridge priority must be a multiple of 4096!

Set unsuccessfully.

[Example]

Set example 2 system priority to be 8192:

Raisecom(config)# **spanning-tree instance 2 priority 8192**

[Related commands]

Commands	Description
show spanning-tree	Show the activities status and configuration information of spanning tree.
spanning-tree root primary	Set switch as root switch designated instance.
spanning-tree root secondary	Set switch as backup root switch designated instance.

1.14 spanning-tree priority (port mode)

[Function]

Set the port priority of spanning tree.

[Command Format]

spanning-tree priority *priority*

no spanning-tree priority

[Parameter]

priority: port priority of spanning tree, this value is discontinuous, range is 0-240, step is 16.

[Default]

Spanning tree port default priority is 128.

[Command Modes]

Physical port/port range configuration mode; privileged user.

[Executing Command Instruction]

The STP needs to select root port and designated port when calculate spanning tree. Lower port priority is easier to be selected as root port or designated port. Users can by setting port priority to select particular port on purpose for controlling STP as root port or designated port.

Priority should value numerals for times of 16, like 0, 16, 32, 48, etc. the smaller the number, the higher the priority, which means the switch is more possible to become root port.

One switch may have different priority in different STP applications in a switch running MSTP protocol and the priorities play different port roles in the STP application; different VLAN data is forwarded along different physical link to realize load balance. Command **spanning-tree instance instance-id priority** can set different system priority for different applications and to affect election of port role. Only input command **spanning-tree priority** means designate priority for application 0 (CIST). Command **no spanning-tree [instance instance-id] priority** will recover default priority for the application.

[Explanation of command execution echo]

Set successfully.

Spanning-tree port priority must be a multiple of 16!

Set unsuccessfully.

[Example]

Set the spanning tree port 2 priorities to be 64 in example 0:

Raisecom(config-port)# **spanning-tree priority 64**

[Related commands]

Commands	Description
show spanning-tree	Show the activities status and configuration information of spanning tree.
show spanning-tree port	Show the port activities status and configuration information of spanning tree.

1.15 spanning-tree transit-limit

[Function]

Set the maximum limitation for transiting packet per hello time.

[Command Format]

spanning-tree transit-limit *packet-number*

no spanning-tree transit-limit

[Parameter]

packet-number: used to set the maximum number of packets that can send BDPU per Hello Time. Range is 1~10.

[Default]

By default situation, the maximum sending speed is 3 per hello time.

[Command Modes]

Global configuration mode; privileged user

[Executing Command Instruction]

Use this command to set the BPDU packet transmission limitation of RSTP per hello time. The higher transmit speed is, the more packets can be sent in each time unit.

[Explanation of command execution echo]

Set successfully.

Set unsuccessfully.

[Example]

Set the maximal transmit BPDU packets per hello time is 10:

```
Raisecom(config)#spanning-tree transmit-limit 10
```

Recover transmit maximal packet to be default setting, which is transmit 3 BPDU packets at maximal per hello time:

```
Raisecom(config)#no spanning-tree transmit-limit
```

[Related commands]

Commands	Description
show spanning-tree	Show the activities status and configuration information of spanning tree.



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